USX South Works
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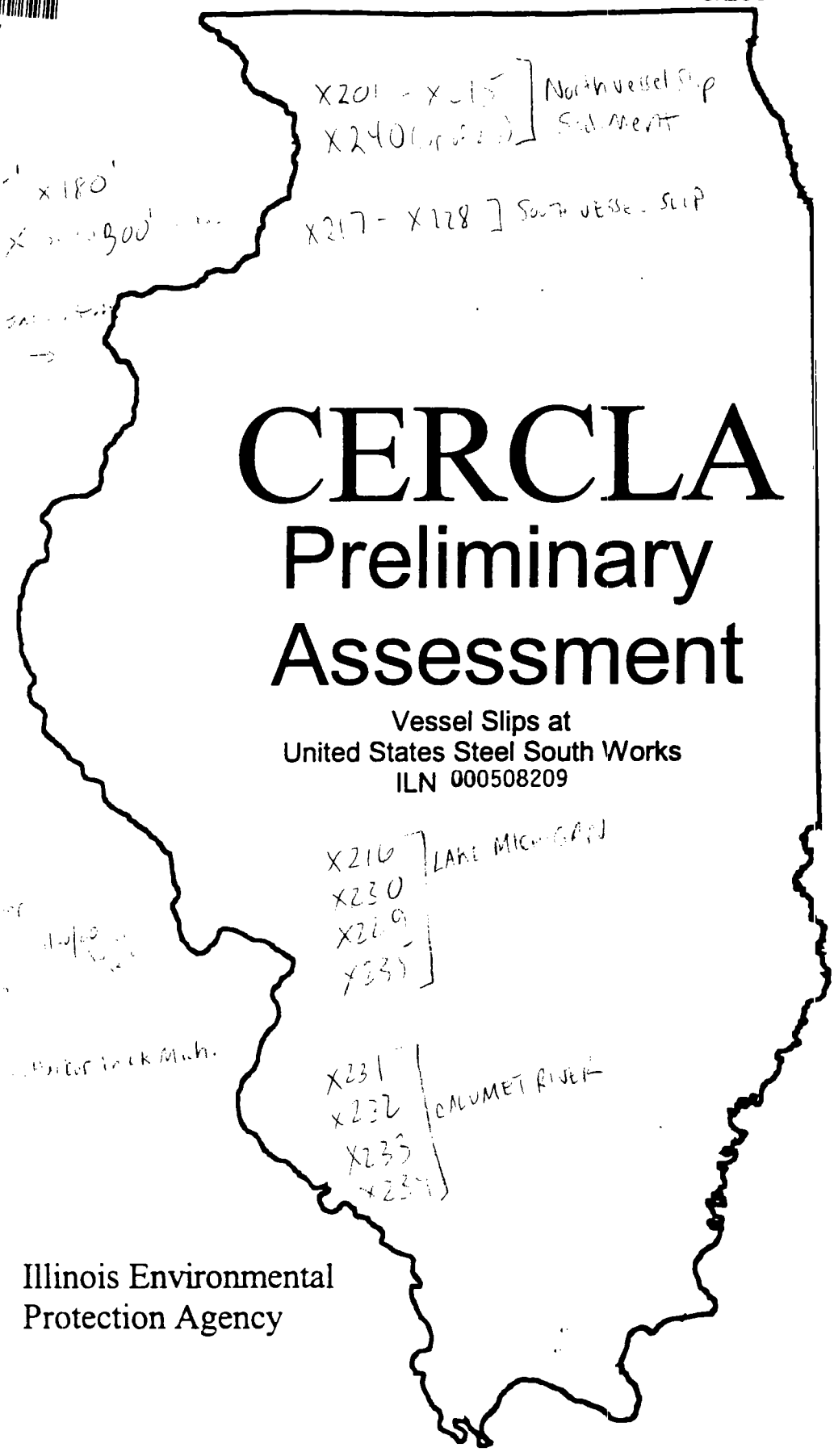

CERCLA
Preliminary Assessment

Vessel Slips at
United States Steel South Works
ILN 000508209

Illinois Environmental
Protection Agency

CERLCA Preliminary Assessment

for:

Vessel Slips at United States Steel South Works
ILN 00050829
CHICAGO, ILLINOIS

PREPARED BY:
ILLINOIS ENVIRONMENTAL PROTECTION AGENCY
BUREAU OF LAND
DIVISION OF REMEDIATION MANAGEMENT
FEDERAL SITE REMEDIATION SECTION
SITE ASSESSMENT UNIT

AUGUST 2001

PETITIONED PRELIMINARY ASSESSMENT
Vessel Slips at United States Steel South Works

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INTRODUCTION

On June 20, 2000, members of the South Deering Community petitioned the United States Environmental Protection Agency (U.S. EPA) Region 5 to conduct a Preliminary Assessment of the suspected release of a hazardous substance, pollutant, or contaminant of the following locations in Southeast Chicago, Illinois:

- Sediments in the North and South Vessel Slips which served the former United States Steel South Works (USX) site. The north vessel slip is located on the Calumet Harbor in Lake Michigan and the south vessel slip is located near the origin of the Calumet River

- Sediments in the Wisconsin (North) and Semet-Solvay (South) Vessel Slips which served the former Wisconsin Steel Works (WSW) site and are located along the Calumet River.

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) and the Superfund Amendments and Reauthorization Act of 1986 (SARA), the U.S. EPA, Superfund Division, Region 5, tasked the Illinois Environmental Protection Agency (Illinois EPA) to conduct an investigation of the petitioned areas. The purpose of the investigation was to collect information concerning environmental conditions within the petitioned vessel slips, adjacent Calumet River, and Lake Michigan in order to assess the threat posed to human health and the environment. The investigation included a review of previous information gathered collected from area sites, sediment sampling from the vessel slips adjacent to the WSW and USX site,

sediment sampling from the Calumet River and Lake Michigan, and the collection of non-sampling data necessary to evaluate the site using the Hazard Ranking System. Illinois EPA's Site Assessment Program was tasked by U.S. EPA to conduct the Preliminary Assessment to determine if contamination exists at these locations and if so determine its potential impact to the vessel slips, Calumet River, and Lake Michigan.

1.0 Background

1.1 Adjacent Areas To The Vessel Slips/History

The USX is approximately 567 acres, located on lake shore property in Chicago, Illinois within Cook County (Figure 1). The USX property is bordered by Rainbow Park to the north, Lake Michigan and Calumet Harbor to the east, the Calumet River to the south, and a residential area to the west. This area is relatively flat, and all of the structures on the property except for powerhouse number 5 and the original office building, have been razed. Lake Michigan forms the eastern border and provides access to two vessel slips used in the past by the facility. The site is situated in an industrial area that becomes a mixed commercial/residential area as you move westward away from Lake Michigan. Of the 567 acres that currently belong to United States Steel, approximately 494 acres were originally part of Lake Michigan and have been filled in with primarily steel-mill slag. The USX facility has never had a coking operation. Operations began at this location in 1882 and ended in 1992.

In 1993, USX Corporation, the parent corporation of United States Steel, entered the Illinois EPA's Site Remediation Program (SRP). The primary focus of this effort

centered on groundwater contamination and the surface water bodies that it directly affects. According to the legal description for this facility the north and south vessel slips do not belong to United States Steel and were excluded from the No Further Remediation Letter issued by the Illinois EPA.

Both the USX North and South Vessel Slip were used to receive raw materials and to transport finished steel products from the facility. In 1995, approximately 3,250 cubic yards of material were dredged and removed form the north slip. Initially two samples were collected from it. One sample was analyzed for TCLP lead and cadmium and the other for volatile organic compounds. In that same year the USX South Vessel Slip had over 100 cubic yards of a non-hazardous, total petroleum hydrocarbons contaminated material removed from it. Three samples were collected from this slip and analyzed for volatile organic compounds.

2.0 Preliminary Assessment Activities

2.1 Sampling Activities

On April 3-5, 2001, Illinois EPA Site Assessment Unit personnel collected three soil samples from two locations on the USX property and thirty-six sediment samples from twenty-six locations within the slips adjacent to the USX facility. The soil samples were collected in and around the transformer area east of powerhouse number five. These samples were collected to determine if the soils in the powerhouse area have been impacted by electrical transformer oil. The sediment samples were collected from the north and south vessel slips, Lake Michigan, and the Calumet River adjacent to the

United States Steel property. The samples were collected to determine if the sediments of the vessel slips, the Calumet River, and/or Lake Michigan have been impacted by past industrial activities within the United States Steel area. The Illinois EPA collected the sediment samples using a stainless steel auger or stainless steel ponar dredge and analyzed for Target Compound List (TCL) analytes. A complete list of TCL Analytes can be found in Appendix B. Following the collection of each sample the location was identified using a Trimble Global Positioning System (GPS) unit. Figure 3 illustrates the location of each sample as designated by the GPS unit. Table 1 provides more detailed information about each sample and its respective location. Tables 2 through 4 provide sediment sample analytical data that has met observed release criteria according to the Hazard Ranking System.

The sediment samples collected during field activities for the Preliminary Assessment were compared to sediment background sample X201 (collected on 11/30/2000) and X229. Sample X201 was collected from the sediments of the Calumet River an appreciable distance down-gradient from the vessel slips adjacent to the USX facility. Sample X229 was collected from the Calumet Harbor in Lake Michigan.

Samples X216, X229, X230, and X235 were collected from the sediments of Lake Michigan. These samples were collected from Lake Michigan to determine if the sediments of the lake may have been impacted by the sediments of the north vessel slip adjacent to the USX property, the discharge from power house number 5, or surface water run-off from the site.

Samples X231, X232, X233, and X234 were collected from the sediments of the Calumet River. According to Illinois EPA file information the Calumet River primarily

flows in a southerly direction away from Lake Michigan. These samples were collected from the Calumet River to determine if the sediments of river have been impacted by the sediments of the south vessel slip adjacent to the USX property, or two historic discharge points located on the south side of the USX property.

Samples X201 through X215 and sample X240 were collected from the sediments of the North Vessel slip adjacent to USX. The samples were collected in order to characterize the sediments in the north vessel slip. Sample X240 was a duplicate sample of X213.

Samples X217 through X228 were collected from the south vessel slip adjacent to the USX property. The samples were collected in order to characterize the sediments in the south vessel slip.

At each sediment sample location an attempt was made to record the distance from the surface of the water to the top of the sediment layer and on the deep sediment samples gauge the total depth of that sediment layer. The water level measurements were made using a flexible tape measure that was weighted on the end. This end was lowered into the water and allowed to lightly rest on top of the sediment layer, at that time the water level was recorded. Estimated depth of the sediment was made using an auger and several auger handle extensions. The sampler would slowly lower the auger into the water, feel the initial sediment layer and apply pressure until refusal was felt. The distance traveled by the auger during this process was then recorded as the depth of sediment for that location.

2.2 Analytic Results

Following the collection of the sediment samples, they were transferred to containers provided by Illinois EPA's Contract Laboratory Program. The sample containers were packaged and sealed in accordance with Illinois EPA's Site Assessment Program procedures. Liberty Analytical located in Cary, North Carolina performed organic sediment sample analysis and Ceimic Corporation located in Narragansett, Rode Island conducted the inorganic analysis of the sediment samples. A complete analytical data package for this sampling activity is located in Appendix E (volume 2 of the Preliminary Assessment report).

Tables 2 through 4 illustrate the levels of contaminants within the sediment samples collected near the former USX property. When compared to background sample X201 (collected on 11/30/200) and X229, the sediment samples from the Calumet River, north vessel slip, and the south vessel slip revealed the presence of significantly elevated inorganic contamination. For this report significantly elevated refers to concentrations that are greater than three time the established background levels.

Sixteen sediment samples were collected from the north vessel slip and when compared to the Lake Michigan sediment background sample X229, six locations exhibited significant inorganic contamination. Elevated copper and lead levels were reported at five of these locations, in both the deep and shallow sediments. X201 (collected on 4/3/01), a deep sediment sample had significantly elevated levels of: arsenic, cadmium, chromium, copper, lead, nickel, vanadium, and zinc. X204, and X208, both deep sediment samples, reported significant elevated levels of copper, lead, and

zinc. X202, and X203, both shallow sediment samples, reported elevated levels of copper and lead. X209, a shallow sediment sample, reported significant elevated levels of chromium and X203, another shallow sediment sample, significant elevated levels of cadmium.

Twelve samples were collected from the sediments of the south vessel slip using a stainless steel auger and stainless steel ponar dredge. When compared to the Calumet River sediment background sample X201, collected 11/30/2000, 12 locations exhibited significant inorganic contamination. Elevated lead levels were reported at all 12 of these locations, in both the deep and shallow sediments. X217, a deep sediment sample had significantly elevated levels of: cadmium, chromium, copper, lead, mercury, and zinc. X219, another deep sediment sample also reported these same contaminants except for mercury. Shallow sediment samples, X218, X221, X224, and X227, had significantly elevated levels of, chromium, copper, and lead. X226, a shallow sediment sample also had significantly elevated levels of copper and X228, a shallow sediment sample also had significantly elevated levels of chromium.

Four sediment samples were collected from Lake Michigan, X216 and X235 at the discharge point of power house number 5, and X229 and X230 south of this discharge area but before the origin of the Calumet River. As state earlier one of these samples X229 was used to establish background sediment levels for the north vessel slip. The remaining samples X216, X230 and X235 were compared to X201, collected on 11/13/00. X216 and X230, both shallow sediment samples had significantly elevated levels of: cadmium, chromium, lead, and zinc. X235, a deep sediment sample had significantly elevated levels of chromium.

Four sediment samples were collected from the Calumet River, X231 and X232, both near historic discharge points, and X233 and X234, east of the south vessel slip. Due to the contamination found east of the South Vessel Slip, sediment sample X201, collected on 11/13/00 was used to establish Calumet River sediment background levels. X232, and X233, both shallow sediment samples had significantly elevated levels of : cadmium, copper, lead, and zinc. X231, and X234, both deep sediment samples had significantly elevated levels of, cadmium, lead, and zinc. X234, also had significantly elevated levels of, arsenic, and copper.

3.0 Migration Pathways

The Site Assessment Program identifies three migration pathways and one exposure pathway, identified in CERCLA's Hazard Ranking System, by which hazardous substances may pose a threat to human health and the environment. Consequently, sites are evaluated on their known or potential impact to these pathways. The pathways evaluated are groundwater migration, surface water migration, soil exposure, and air migration.

3.1 Groundwater

Investigations within the Lake Calumet area have determined that the geology is composed of surficial deposits of fine lake silt and clay, marsh deposits of muck and peat, sand, gravel, and clay-rich till units of varying thickness. Within the USX Vessel Slip areas the specific geology is characterizes as urban fill and consists primarily of slag

material, cinders, and crushed stone, brick, or clay mixed within urban loam. No groundwater samples were collected during the Preliminary Assessment.

3.2 Surface Water

The surface water drainage route consists of the Lake Michigan and the Calumet River. The surface water pathway for the petitioned area originates from the waters of Lake Michigan immediately south of the former USX facility. Adjacent to the former USX site, surface water enters the Calumet River flowing past the two vessel slips identified in the April 2001 field investigation. Surface water within Calumet River continues to flow south for an additional 2.9 miles before passing by the vessel slips adjacent to the WSW site. From this location, surface water continues to flow in a southerly direction for an additional three miles. At that location, the Calumet River splits allowing a portion of the water to flow into Lake Calumet while the other portion continues to flow along within the river. The Calumet River meanders west before reaching the 15-mile Target Distance Limit within the vicinity of Palos Heights. The Calumet River was identified to contain more than one Probably Point of Entry (PPE) since multiple sample points identified a release to surface water. Since more than one PPE has been identified, the Target Distance Limit will include the distance from PPE#1 (USX) to PPE#2 (WSW) for a total of 17.9 miles (Refer to Appendix A). The Calumet River and Lake Michigan are listed as fisheries according to the Illinois Department of Natural Resources and is used for recreational purposes.

Samples collected from the vessel slips adjacent to the USX site indicate that inorganic contamination is present within the sediments. The data collected during this

sampling event indicate that contaminants have migrated from the vessel slips into the Calumet Harbor and Calumet River.

Each vessel slip has been documented to contain contaminated sediments. Since each vessel slip is contiguous with the Calumet River, the potential that each vessel slip has impacted the river is possible. As long as each vessel slip remains open to the adjacent Calumet River and Lake Michigan, a risk to the adjacent fishery and recreational area is probable. Due to the industrial setting of the area around the slips it appears that the likely hood of directed human exposure to these sediments is very low.

3.3 Soil Exposure

The Soil Exposure Pathway evaluates the contamination in the upper two feet of the grounds surface. The sediments in the vessel slips are continuously under several feet of water and direct contact to them through this pathway is not likely. Due to these conditions the Soil Exposure Pathway was not evaluated at this site.

3.4 Air Route

No formal air samples were collected during Preliminary Assessment sampling activities. Due to that fact that the subject of preliminary assessment did not involve the air migration pathway it was not addressed during this investigation.

4.0 References

Illinois EPA, Bureau of Land, file information.

5.0 Figures and Tables

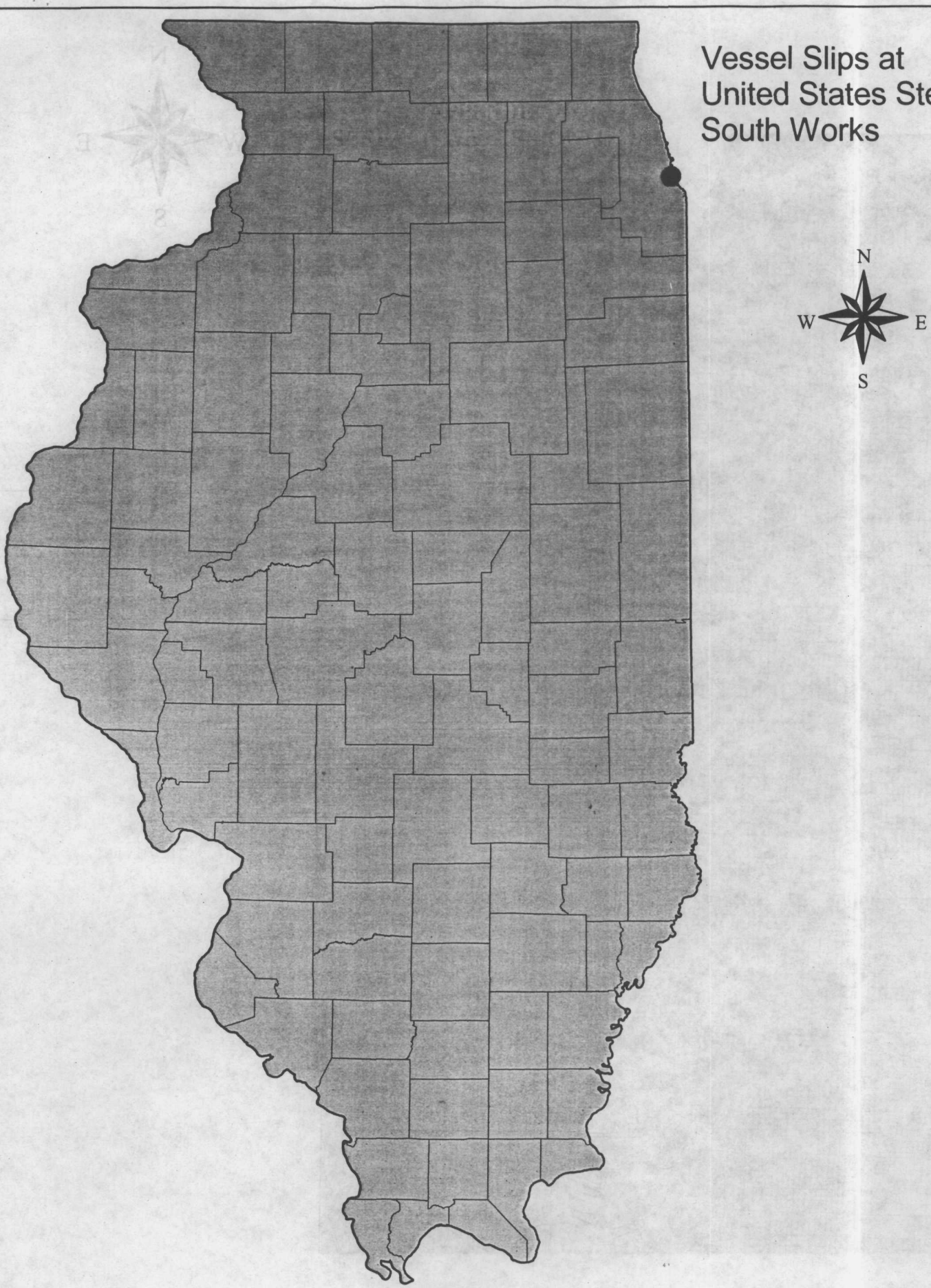


Figure 1.
Vessel Slips at United States Steel South Works
Site Location Map

Figure 2.
Vessel Slips at United States Steel South Works
Site Area Map

Figure 3.
Vessel Slips at United States Steel South Works
Sample Location Map

Table 1, Sample Descriptions, Page 1 of 2

USX South Works

	Sample	Location / Water Depth / Sampling Device	Appearance / Sampler Notes
	X101	**inside main transformer area**	**dark, gritty, sandy**
Date	4/2/01	0-4" deep	dust, slag fines
Time	1135		
	X102	**inside main transformer area**	**dark, gritty, sandy**
Date	4/2/01	6-12" deep	dust, slag fines
Time	1155		
	X103	**south side of transformer area**	**dark, gritty, sandy**
Date	4/2/01	0-2"	dust, slag fines
Time	1210		
	X201	**north vessel slip**	**strong petroleum odor**
Date	4/3/01	21' water, 4-12" sediment, auger	black silt, very fine sand
Time	1430		
	X202	**north vessel slip**	**light gray silt**
Date	4/3/01	27' water, ponar dredge	with zebra muscles
Time	1430		
	X203	**north vessel slip**	**light tan-gray silt**
Date	4/3/01	28' water, ponar dredge	with pebbles
Time	1500		
	X204	**north vessel slip**	**oil sheen, black silt**
Date	4/3/01	28' water, 2' sediment, auger	petroleum odor
Time	1515		
	X205	**north vessel slip**	**very fine sand, light gray silt**
Date	4/3/01	27' water, ponar dredge	oil sheen
Time	1530		
	X206	**north vessel slip**	**light gray silt**
Date	4/3/01	28.5' water, ponar dredge	rounded pebbles, zebra muscles
Time	1540		
	X207	**north vessel slip**	**light gray silt**
Date	4/3/01	28' water, ponar dredge	some very fine sand
Time	1705		
	X208	**north vessel slip**	**oil sheen, petroleum odor**
Date	4/3/01	28' water, 3' sediment, auger	black silt, some silty clay
Time	1715		
	X209	**north vessel slip**	**brown black silt**
Date	4/3/01	28' water, ponar dredge	some sandy clay
Time	1735		some zebra muscle shells
	X210	**north vessel slip**	**brown black silt**
Date	4/3/01	28' water, 3' sediment, auger	some sandy clay
Time	1745		very little sand
	X211	**north vessel slip**	**light gray silt**
Date	4/3/01	27' water, 3' sediment, ponar dredge	some sand
Time	1815		
	X212	**north vessel slip**	**dark gray silt, some sandy clay**
Date	4/3/01	27' water, auger	very fine sand
Time	1820		
	X213	**north vessel slip**	**light gray silt**
Date	4/4/01	26.5' water, ponar dredge	very fine sand
Time	0910		
	X214	**north vessel slip**	**light gray silt**
Date	4/4/01	29' water, ponar dredge	very fine sand
Time	0930		
	X215	**north vessel slip**	**dark gray silt**
Date	4/4/01	23' water, ponar dredge	black fine granular material
Time	0945		
	X216	**Lake Michigan, near discharge from powerhouse #5**	**gray sandy silt**
Date	4/4/01	15' water, ponar dredge	organic matter, leaves, sticks
Time	1005		fishing line

Table 1, Sample Descriptions, Page 2 of 2
USX South Works

	Sample	Location / Water Depth / Sampling Device	Appearance / Sampler Notes
	X217	south vessel slip	dark loose, oily
Date	4/3/01	17' water, 3' sediment, auger	dark brown, pasty silt
Time	0825		
	X218	south vessel slip	light gray silt
Date	4/3/01	17' water, 6' sediment, ponar dredge	fishing line
Time	0840		
	X219	south vessel slip	brown-brown pasty silt
Date	4/3/01	25' water, auger	
Time	0850		
	X220	south vessel slip	light gray silt
Date	4/3/01	25' water, ponar dredge	traces of poly rope
Time	0910		
	X221	south vessel slip	light gray silt
Date	4/3/01	26' water, ponar dredge	zebra muscles, fishing line, shells
Time	0925		
	X222	south vessel slip	light gray silt
Date	4/3/01	27' water, ponar dredge	cinders
Time	1015		
	X223	south vessel slip	dark gray silt
Date	4/3/01	27' water, +3' sediment, auger	
Time	1020		
	X224	south vessel slip	light gray silt
Date	4/3/01	26' water, ponar dredge	very fine sand/cinders
Time	1050		zebra muscle shells
	X225	south vessel slip	dark gray silt
Date	4/3/01	26' water, +3' sediment, auger	fine sand or cinders
Time	1055		
	X226	south vessel slip	light gray silt
Date	4/3/01	27' water, ponar dredge	very fine sand/cinders
Time	1110		
	X227	south vessel slip	light gray silt
Date	4/3/01	26.5' water, ponar dredge	very fine sand 3/8-3/4 slag
Time	1125		(dead fish)
	X228	south vessel slip	dark brown-brown silt
Date	4/3/01	27' water, ponar dredge	very fine sand
Time	1345		
	X229	Lake Michigan	gray sandy silt
Date	4/4/01	9-11' water, ponar dredge	
Time	1020		
	X230	Lake Michigan	gray silt
Date	4/4/01	16' water, ponar dredge	very little sand
Time	1030		
	X231	Calumet River near (discharge point)	light petroleum sheen, course sand
Date	4/4/01	14' water, 1' sediment, auger	pebbles, black granular material
Time	1050		
	X232	Calumet River (near discharge point)	gray silt
Date	4/4/01	28' water, ponar dredge	shells, brown sheen, pebbles
Time	1130		fishing line
	X233	Calumet River	gray silt, slight odor
Date	4/4/01	16' water, ponar dredge	shells, some sand, sheen
Time	1225		
	X234	Calumet River, draw bridge for Route 41	black silty clay, some sand
Date	4/4/01	21' water, auger	petroleum odor
Time	1235		
	X235	Lake Michigan	dark sand, small gravel, slag, fines
Date	4/2/01	discharge point for power house number 5	
Time	1410	auger	
	X240	north vessel slip	dark gray silt
Date	4/4/01	duplicate of X213	black fine granular material
Time	0945		

Table 2
Sample Analysis of North Vessel Slip Sediment Samples
Adjacent to United States Steel South Works

Sample Number	ME0034		ME0017		ME0018		ME0019		ME0020		ME0021		ME0022		ME0023		ME0024		ME0025		ME0026		ME0027		ME0028		ME0029		ME0030		ME0031		ME0032	
Sampling Location :	X229		X201		X202		X203		X204		X205		X206		X207		X208		X209		X210		X211		X212		X213		X240		X214		X215	
	sed. bkgnd.																																	
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	04/04/2001		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/04/2001		04/03/2001		04/04/2001		04/04/2001		04/04/2001		04/04/2001		04/04/2001		04/04/2001		04/04/2001		04/04/2001	
Time Sampled :	10:20		14:30		14:45		15:00		15 15		15.30		15:40		17:05		17:15		17:35		17:45		18:15		18:20		09:10		09:10		09:30		09:45	
%Solids :	52.9		50.4		47.2		35.3		47.9		43.7		39		32 6		56.8		44 3		53.8		55		71.2		43 2		40 2		39.2		59.5	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ARSENIC	9.2		42.1		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
CADMIUM	1.5		6 5		--		4.8		--		--		--		--		--		--		--		--		--		--		--		--		--	
CHROMIUM	50.4		217		--		--		--		--		--		--		--		231		--		--		--		--		--		--		--	
COPPER	28.6		289		112		154		158		--		--		--		130		--		--		--		--		--		--		--		--	
LEAD	55		507		228		432		425		--		--		--		266		--		--		--		--		--		--		--		--	
NICKEL	27.2		184		--		--		--		--		--		--		--		--		--		--		--		--		--		--		--	
ZINC	165		769		--		1010		854		--		--		--		658		--		--		--		--		--		--		--		--	

Data Qualifiers:
-- Analyte/Compound did not meet observed release criteria
U Analyte/Compound was not detected
J Estimated value

Table 3
Sample Analysis of Sediments of the South Vessel Slip
Adjacent to United States Steel South Works

Sample Number	MEE02B		ME0005		ME0006		ME0007		ME0008		ME0009		ME0010		ME0011		ME0012		ME0013		ME0014		ME0015		ME0016	
Sampling Location	X201		X217		X218		X219		X220		X221		X222		X223		X224		X225		X226		X227		X228	
Matrix :	sed. Bkgnd.		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil		Soil	
Units	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	11/13/2000		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/03/2001		04/02/2001	
Time Sampled :	13:00		08:25		08:40		08 50		09 10		09 25		10:15		10:20		10:50		10:55		11.10		11:25			
%Solids :	49.8		41 4		40 8		39.9		40 1		37.8		42.5		42 4		48 7		48.0		46.1		42.3		48.9	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
CADMIUM	0.16		11.8	J	--		8 0	J	--		--		--		--		--		--		--		--		--	
CHROMIUM	11.6		873		40 6		1030		--		52 7		--		54.6		38 9		42.9		--		36.5		41.2	
COPPER	17.4		364		52.6		386		--		66.5		--		70 2		52.4		55 3		55.6		56.3		--	
LEAD	21.7		1140		105		827		92 4		119		85.7		168		88.7		115		94.1		118		101	
MERCURY	0.1	U	0.35		--		--		--		--		--		--		--		--		--		--		--	
ZINC	86.2		5240	J	--		4000	J	--				--		--		--		--		--		--		--	

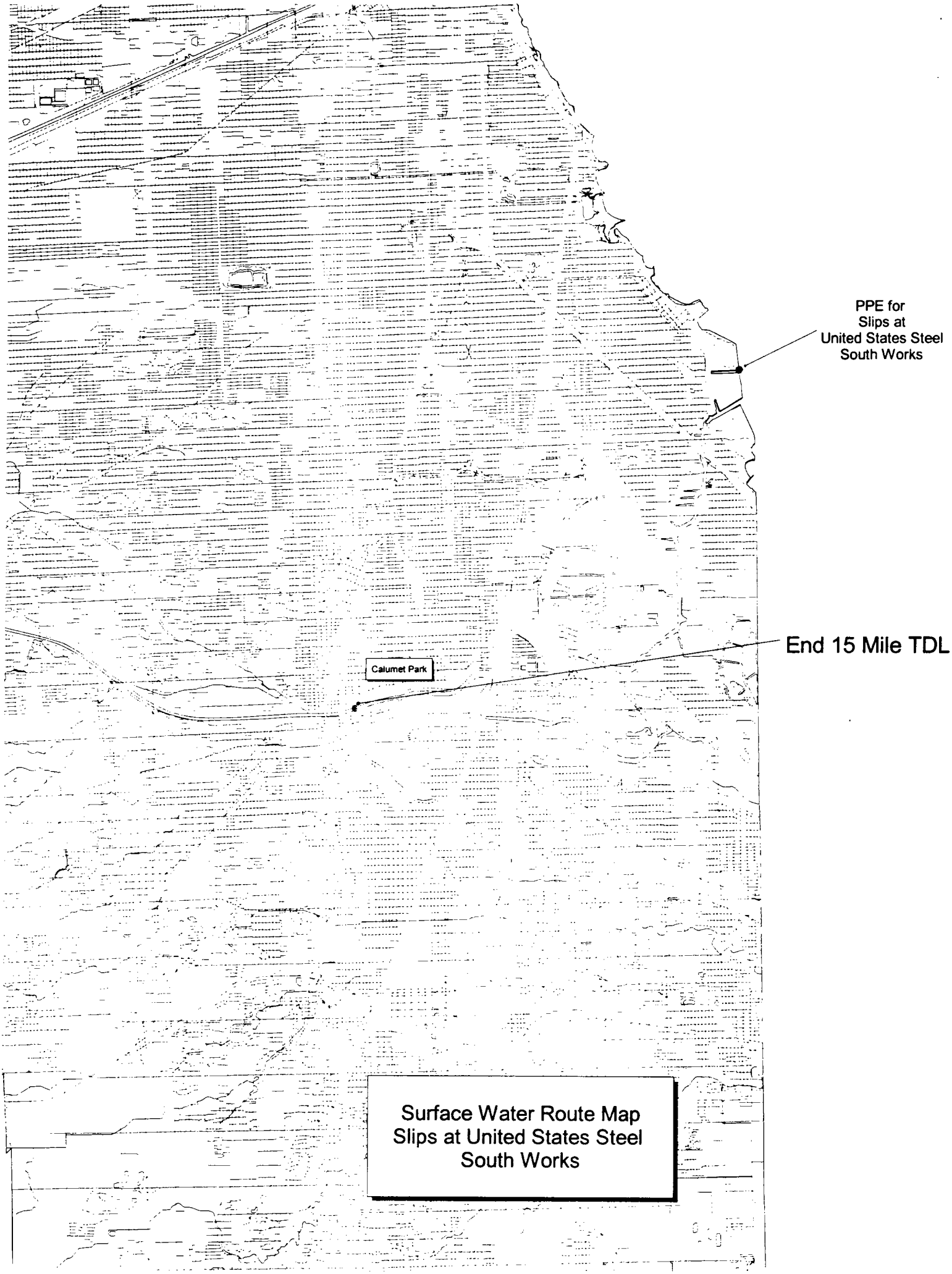
Data Qualifiers:
-- Analyte/Compound did not meet observed release criteria
U Analyte/Compound was not detected
J Estimated value

Table 4
Sample Analysis of Calumet River and Lake Michigan Sediment Samples
Adjacent to United States Steel South Works

Sample Number :	MEE02B		ME0033		ME0035		ME0036		ME0037		ME0038		ME0039		ME0004	
Sampling Location :	X201		X216		X230		X231		X232		X233		X234		X235	
	sed. Bkgnd.															
Units :	mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg		mg/Kg	
Date Sampled :	11/13/2000		04/04/2001		04/04/2001		04/04/2001		04/04/2001		04/04/2001		04/04/2001		04/03/2001	
Time Sampled :	13:00		10 05		10:30		11 05		11 30		12:25		12:35		14:10	
%Solids :	49.8		60.7		48		59		50 6		64.6		65.5		75.5	
ANALYTE	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag	Result	Flag
ARSENIC	5.1		--		--		--		--		--		78 7		--	
CADMIUM	0.16		0 77		1 3		2.3		2		2.1		2 1		--	
CHROMIUM	11.6		42.8		35.7		--		--		--		--		876	
COPPER	17.4		--		--		--		53		67 5		92.3		--	
LEAD	21.7		50.9		55.4		110		94		111		184		16.7	
ZINC	86.2		--		--		280		264		316		413		--	

Data Qualifiers:
-- Analyte/Compound did not meet observed release criteria
U Analyte/Compound was not detected
J Estimated value

APPENDIX A
SURFACE WATER ROUTE MAP


PPE for
Slips at
United States Steel
South Works
End 15 Mile TDL
Calumet Park
Surface Water Route Map
Slips at United States Steel
South Works

APPENDIX B
TARGET COMPOUND LIST

TARGET COMPOUND LIST

Volatile Target Compounds

Chloromethane	1,2-Dichloropropane
Bromomethane	cis-1,3-Dichloropropene
Vinyl Chloride	Trichloroethene
Chloroethane	Dibromochloromethane
Methylene Chloride	1,1,2-Trichloroethane
Acetone	Benzene
Carbon Disulfide	trans-1,3-Dichloropropene
1,1-Dichloroethene	Bromoform
1,1-Dichloroethane	4-Methyl-2-pentanone
1,2-Dichloroethene (total)	2-Hexanone
Chloroform	Tetrachloroethene
1,2-Dichloroethane	1,1,2,2-Tetrachloroethane
2-Butanone	Toluene
1,1,1-Trichloroethane	Chlorobenzene
Carbon Tetrachloride	Ethylbenzene
Vinyl Acetate	Styrene
Bromodichloromethane	Xylenes (total)

Base/Neutral Target Compounds

Hexachloroethane	2,4-Dinitrotoluene
bis(2-Chloroethyl)Ether	Diethylphthalate
Benzyl Alcohol	N-Nitrosodiphenylamine
bis(2-Chloroisopropyl)Ether	Hexachlorobenzene
N-Nitroso-Di-n-Propylamine	Phenanthrene
Nitrobenzene	4-Bromophenyl-phenylether
Hexachlorobutadiene	Anthracene
2-Methylnaphthalene	Di-n-Butylphthalate
1,2,4-Trichlorobenzene	Fluoranthene
Isophorone	Pyrene
Naphthalene	Butylbenzylphthalate
4-Chloroaniline	bis(2-Ethylhexyl)Phthalate
bis(2-chloroethoxy)Methane	Chrysene
Hexachlorocyclopentadiene	Benzo(a)Anthracene
2-Chloronaphthalene	3,3'-Dichlorobenzidene
2-Nitroaniline	Di-n-Octyl Phthalate
Acenaphthylene	Benzo(b)Fluoranthene
3-Nitroaniline	Benzo(k)Fluoranthene
Acenaphthene	Benzo(a)Pyrene
Dibenzofuran	Indeno(1,2,3-cd)Pyrene
Dimethyl Phthalate	Dibenz(a,h)Anthracene
2,6-Dinitrotoluene	Benzo(g,h,i)Perylene
Fluorene	1,2-Dichlorobenzene
4-Nitroaniline	1,3-Dichlorobenzene
4-Chlorophenyl-phenylether	1,4-Dichlorobenzene

Acid Target Compounds

Benzoic Acid	2,4,6-Trichlorophenol
Phenol	2,4,5-Trichlorophenol
2-Chlorophenol	4-Chloro-3-methylphenol
2-Nitrophenol	2,4-Dinitrophenol
2-Methylphenol	2-Methyl-4,6-dinitrophenol
2,4-Dimethylphenol	Pentachlorophenol
4-Methylphenol	4-Nitrophenol
2,4-Dichlorophenol	

Pesticide/PCB Target Compounds

alpha-BHC	Endrin Ketone
beta-BHC	Endosulfan Sulfate
delta-BHC	Methoxychlor
gamma-BHC (Lindane)	alpha-Chlorodane
Heptachlor	gamma-Chlorodane
Aldrin	Toxaphene
Heptachlor epoxide	Aroclor-1016
Endosulfan I	Aroclor-1221
4,4'-DDE	Aroclor-1232
Dieldrin	Aroclor-1242
Endrin	Aroclor-1248
4,4'-DDD	Aroclor-1254
Endosulfan II	Aroclor-1260
4,4'-DDT	

Inorganic Target Compounds

Aluminum	Manganese
Antimony	Mercury
Arsenic	Nickel
Barium	Potassium
Beryllium	Selenium
Cadmium	Silver
Calcium	Sodium
Chromium	Thallium
Cobalt	Vanadium
Copper	Zinc
Iron	Cyanide
Lead	Sulfide
Magnesium	Sulfate

SPECIAL PESTICIDE LIST

2,4-D

Atrazine

Metolachlor -- Dual

Cyanazine -- Bladex

Fonofos -- Dyfonate

EPTC -- Eptam, Eradicane

Phorate

Metribuzin -- Lexone, Sencor

Trifluralin -- Treflan

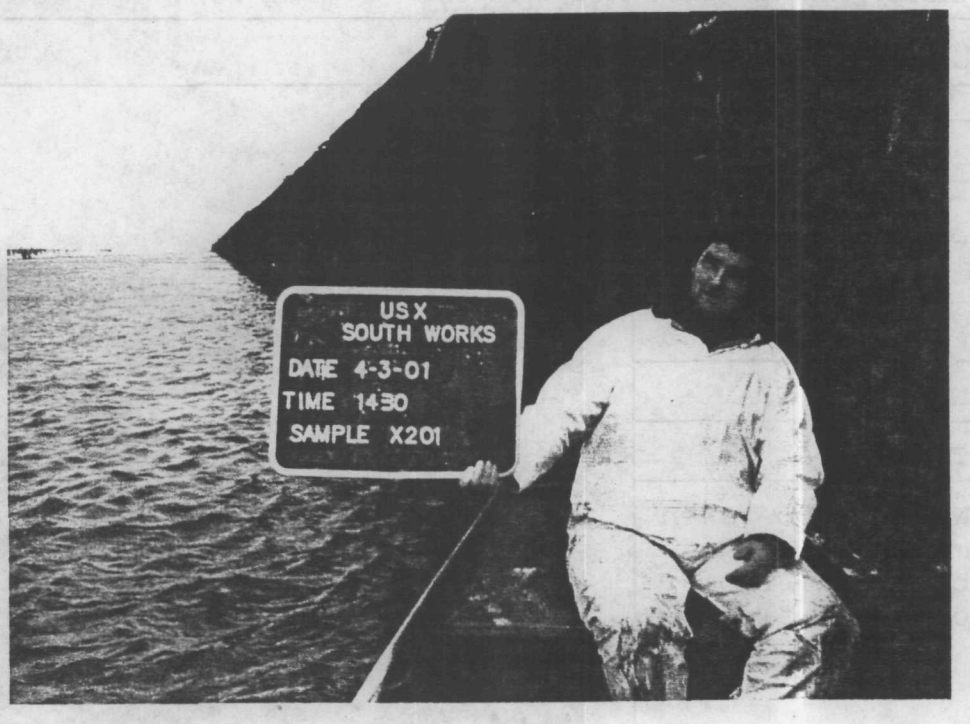
Diazinon

Alachlor -- Lasso

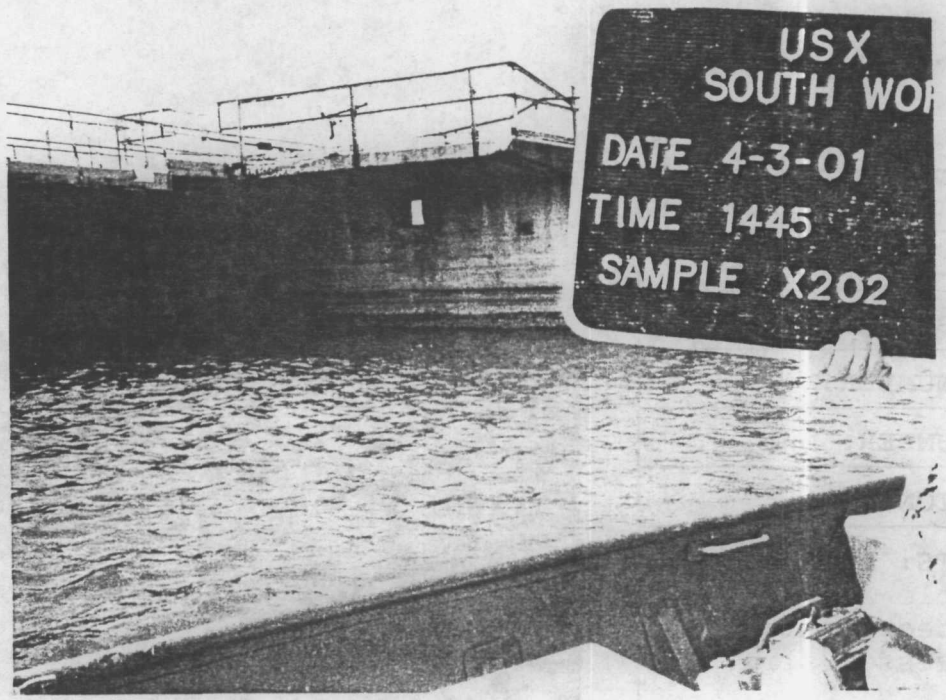
APPENDIX C
ILLINOIS EPA SAMPLE PHOTOGRAPHS

SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

DATE: April 3, 2001
TIME: 14:30 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 1
ROLL NUMBER: N/A
DIRECTION: East
COMMENTS: Photo taken of sample X201 collected from the north vessel slip.



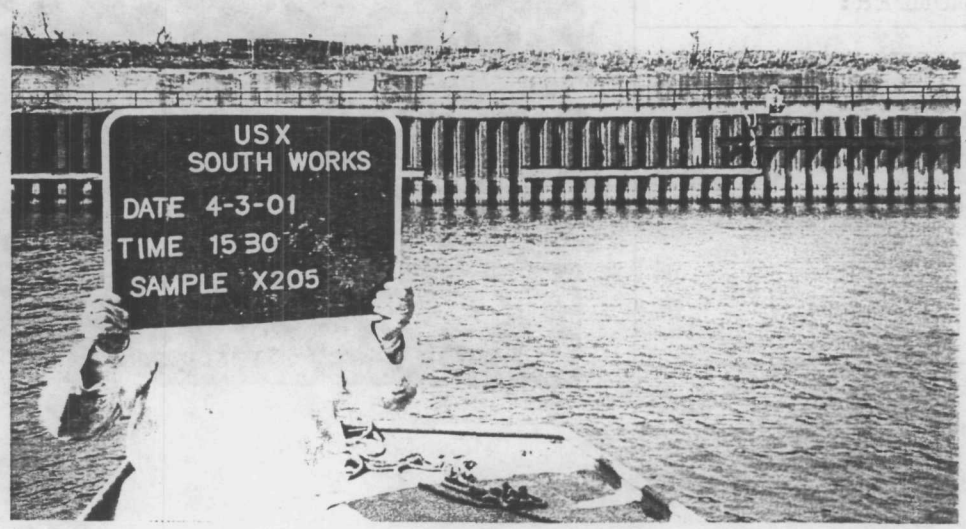
DATE: April 3, 2001
TIME: 14:45 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 2
ROLL NUMBER: N/A
DIRECTION: West
COMMENTS: Photo taken of sample X202 collected from the north vessel slip.



SITE NAME:	United States Steel South Works
CERCLIS ID: N/A	**COUNTY:** Cook

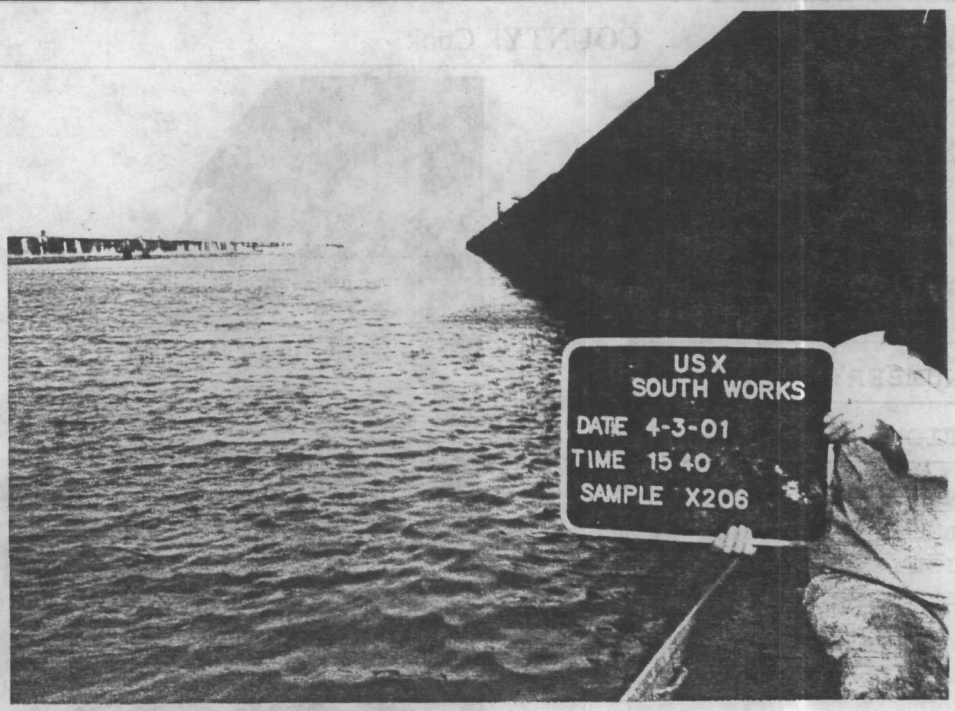
DATE: April 3, 2001
TIME: 15:15 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 3
ROLL NUMBER: N/A
DIRECTION: West
COMMENTS: Photo taken of sample X203 and X204 collected from the north vessel slip.

DATE: April 3, 2001
TIME: 15:30 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 4
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X205 collected from the north vessel slip.

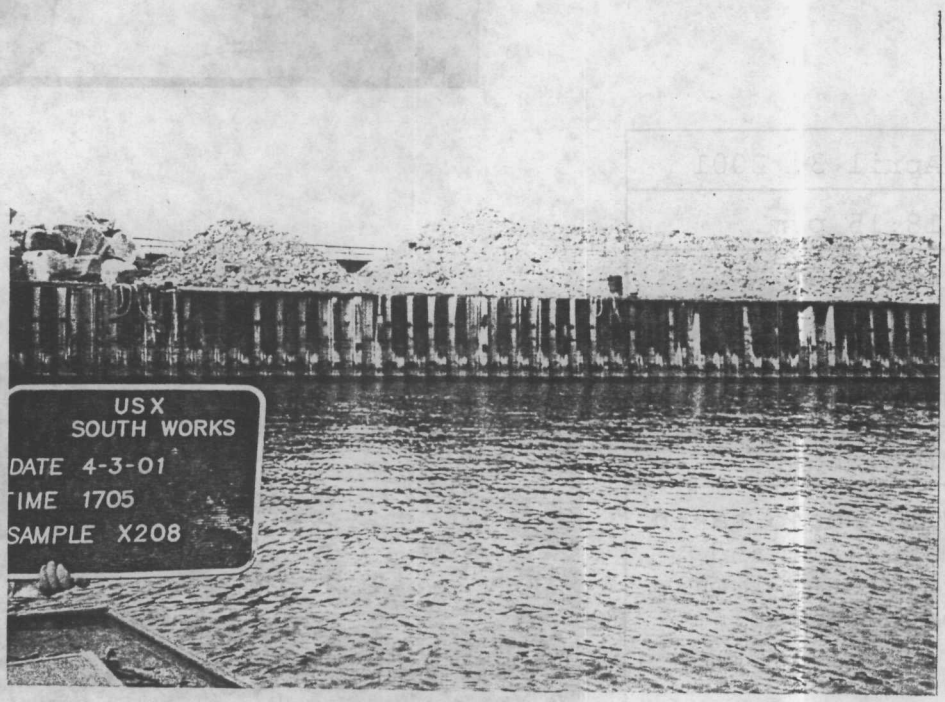


SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

DATE: April 3, 2001
TIME: 15:40 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 5
ROLL NUMBER: N/A
DIRECTION: East
COMMENTS: Photo taken of sample X206 collected from the north vessel slip.

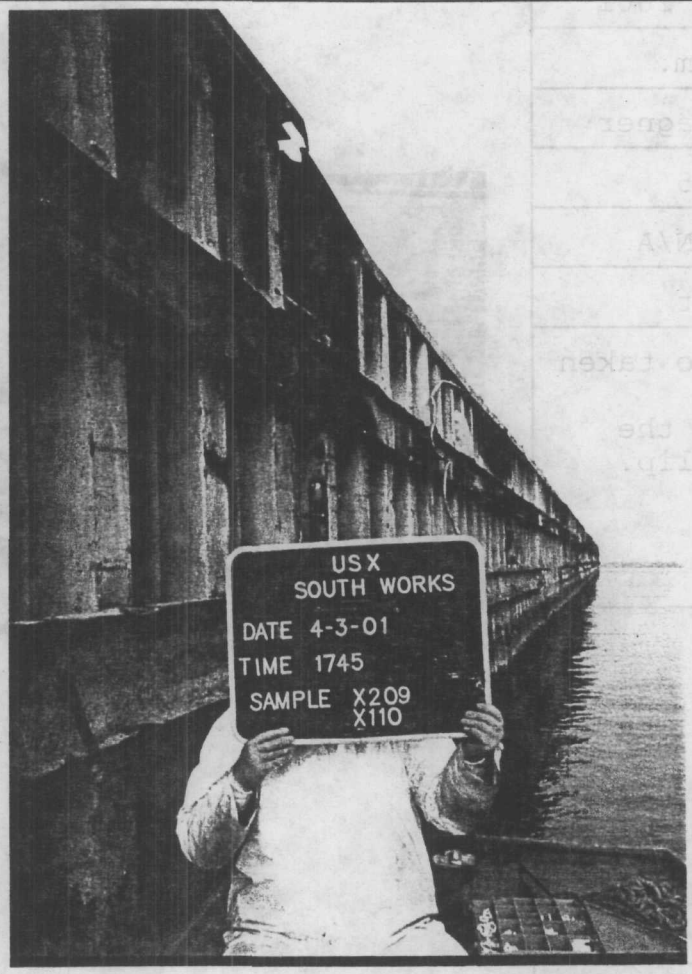


DATE: April 3, 2001
TIME: 17:05 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 6
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X208 collected from the north vessel slip.



SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

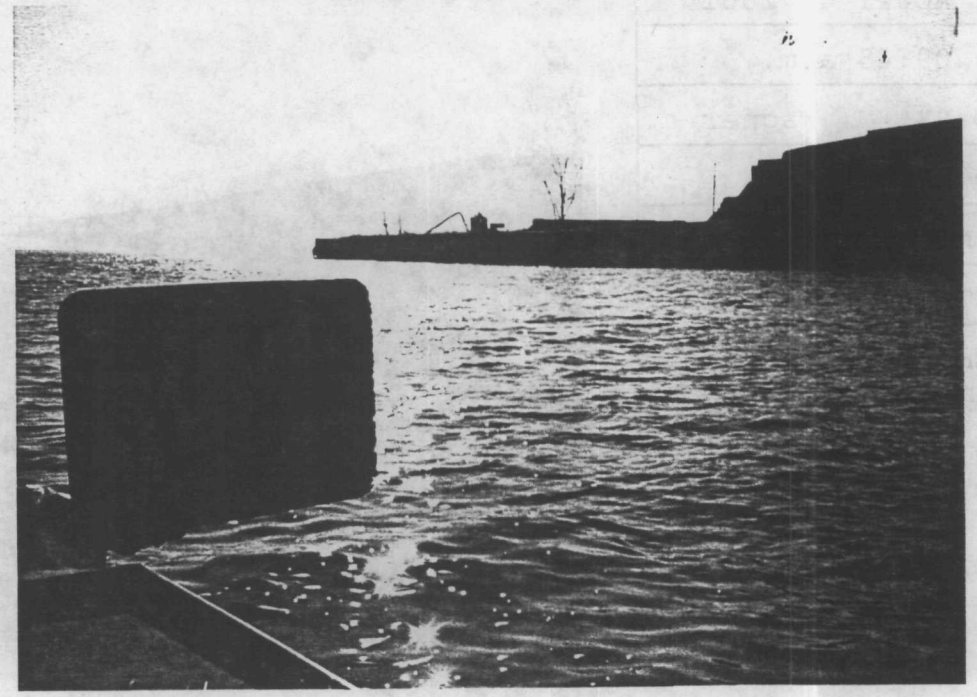
DATE: April 3, 2001
TIME: 17:35 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 7
ROLL NUMBER: N/A
DIRECTION: East
COMMENTS: Photo taken of sample X209 and X210 collected from the north vessel slip.



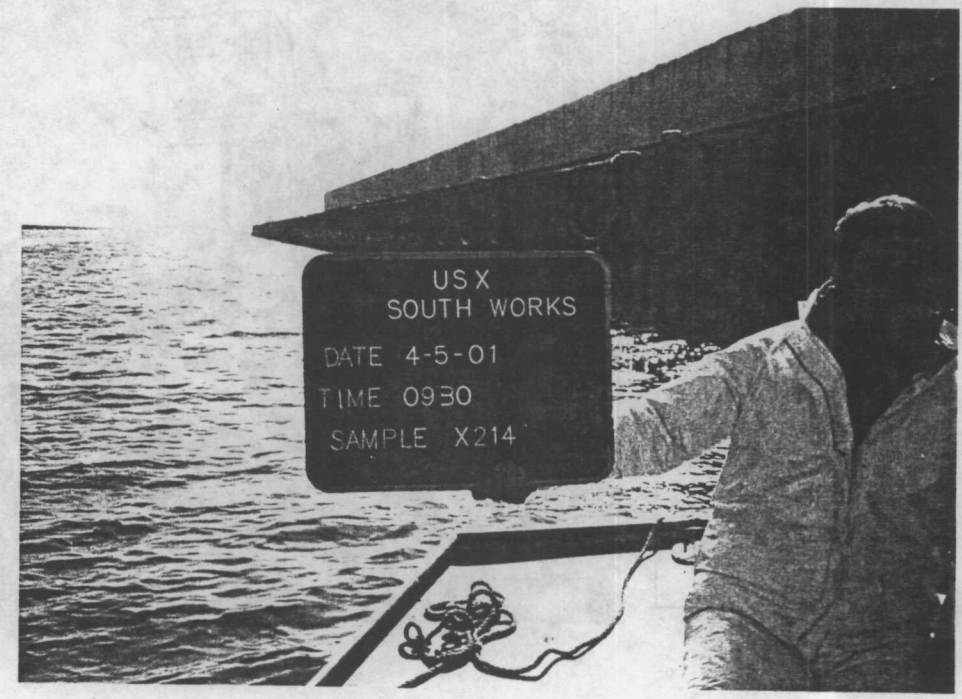
DATE: April 3, 2001
TIME: 18:15 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 8
ROLL NUMBER: N/A
DIRECTION: East
COMMENTS: Photo taken of sample X211 and X212 collected from the north vessel slip.

SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

DATE: April 4, 2001
TIME: 09:10 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 9
ROLL NUMBER: N/A
DIRECTION: South
COMMENTS: Photo taken of sample X213 and duplicate sample X240 collected from the north vessel slip.

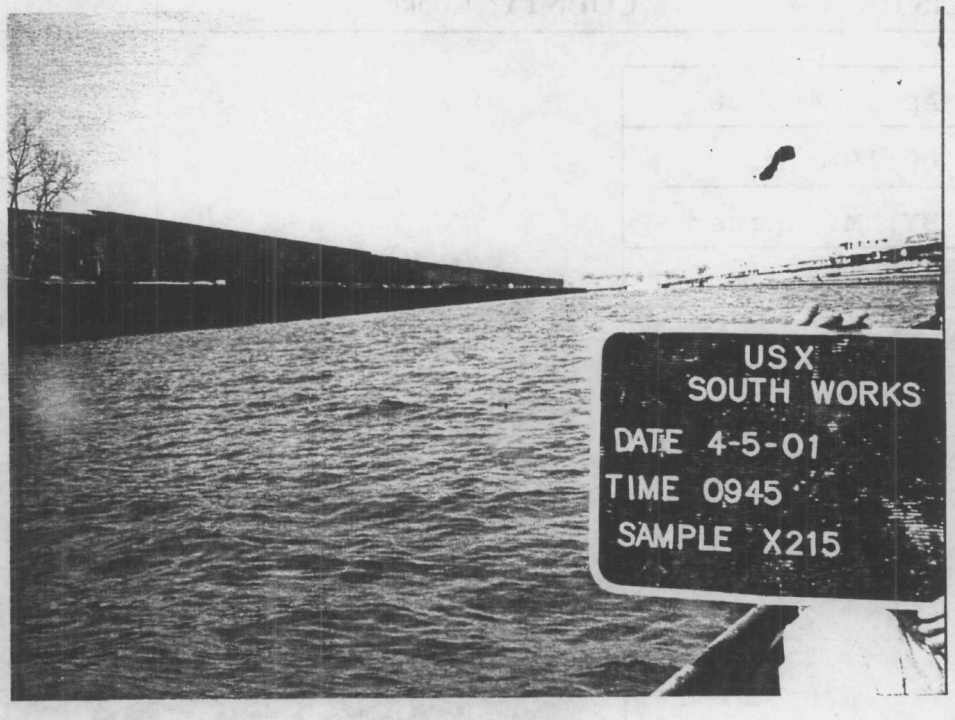


DATE: April 3, 2001
TIME: 09:30 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 10
ROLL NUMBER: N/A
DIRECTION: East
COMMENTS: Photo taken of sample X214 collected from the north vessel slip.

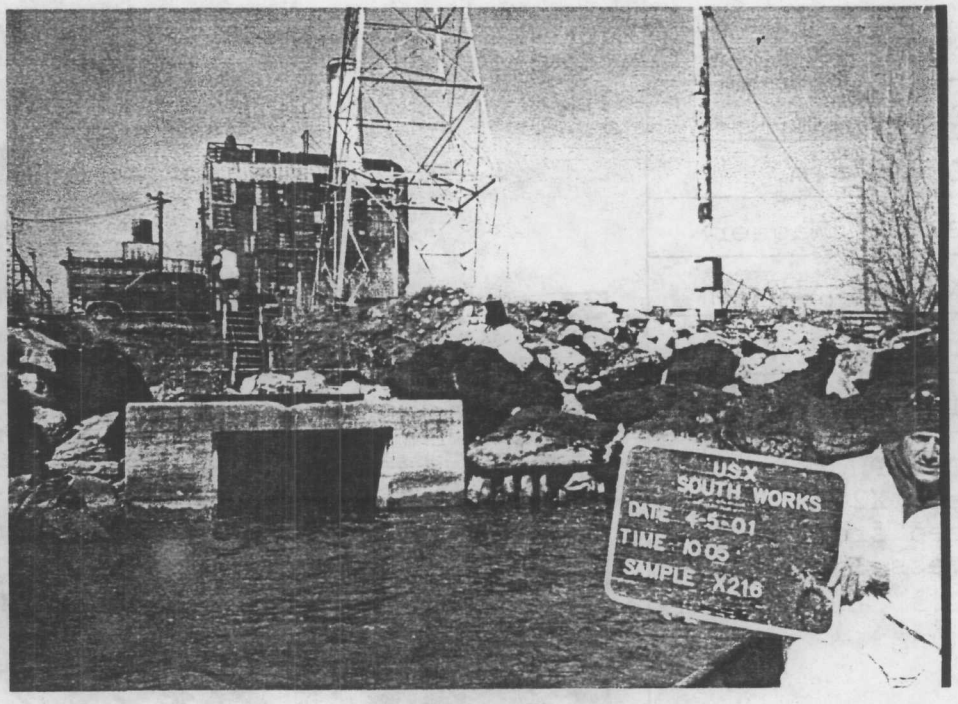


SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

DATE: April 4, 2001
TIME: 09:45 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 11
ROLL NUMBER: N/A
DIRECTION: West
COMMENTS: Photo taken of sample X215 collected from the north vessel slip.

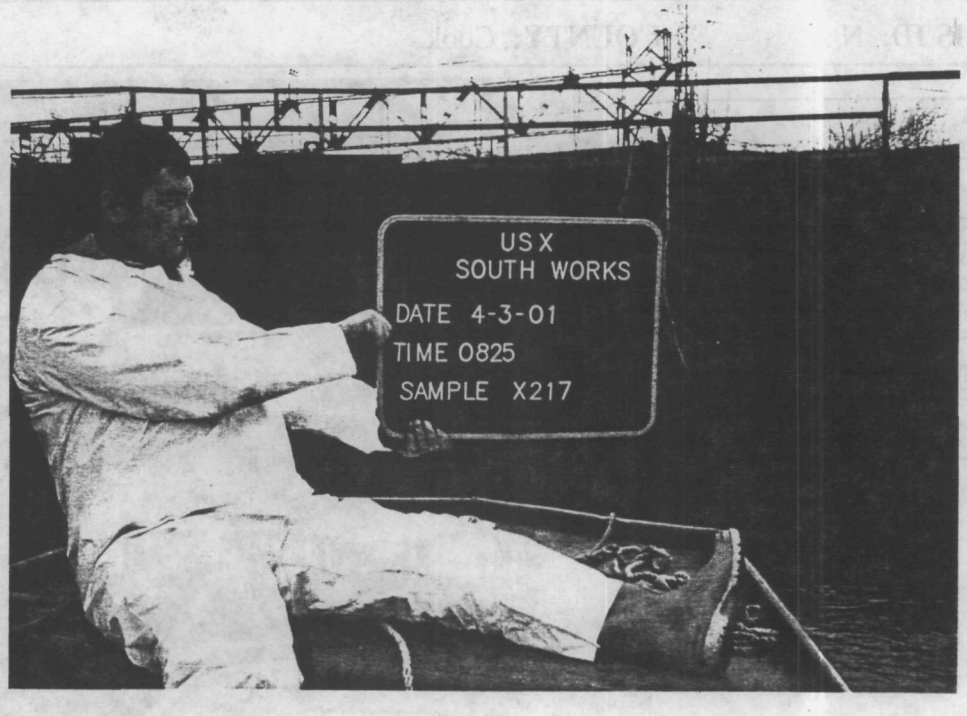


DATE: April 4, 2001
TIME: 10:05 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 12
ROLL NUMBER: N/A
DIRECTION: West
COMMENTS: Photo taken of sample X216 collected from discharge point from power house number 5.

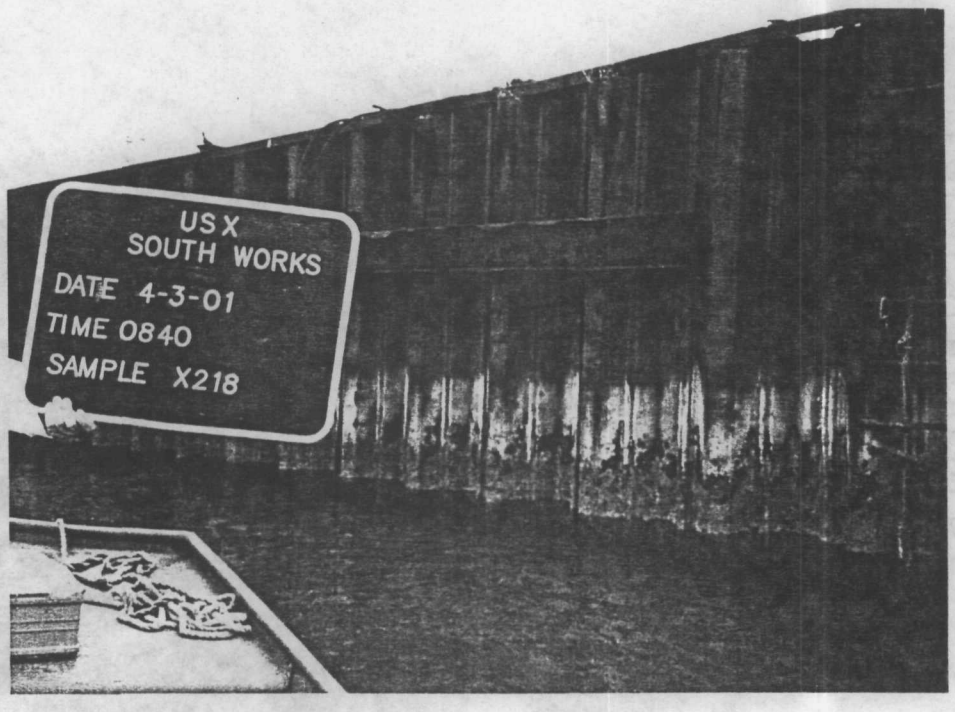


SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

DATE: April 3, 2001
TIME: 08:25 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 13
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X217 collected from the south vessel slip.

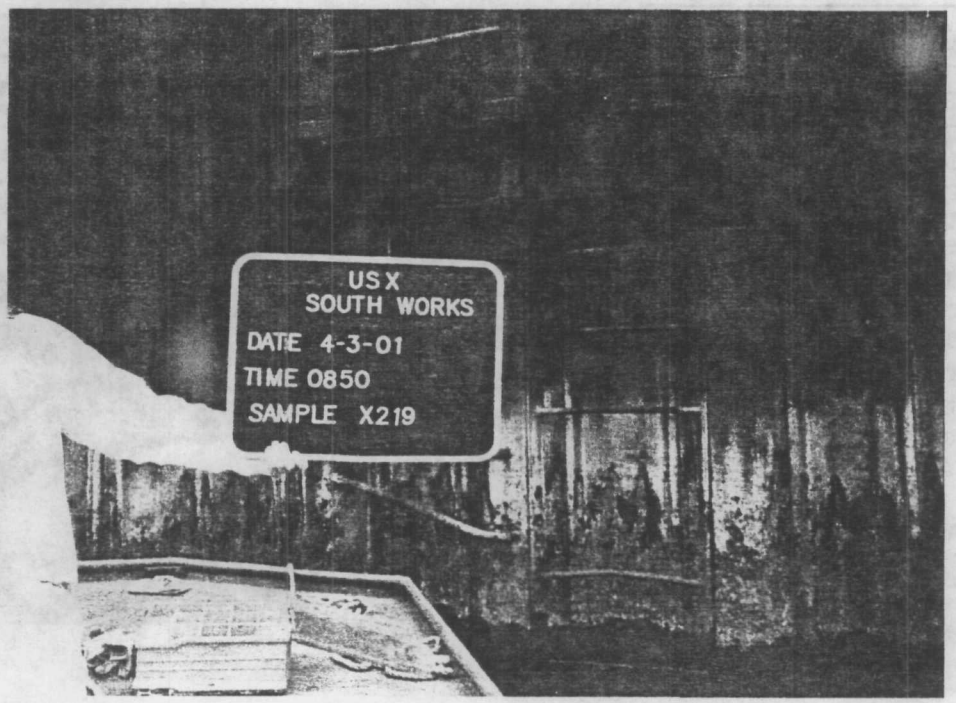


DATE: April 3, 2001
TIME: 08:40 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 14
ROLL NUMBER: N/A
DIRECTION: East
COMMENTS: Photo taken of sample X218 collected from the south vessel slip.



SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

DATE: April 3, 2001
TIME: 08:50 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 15
ROLL NUMBER: N/A
DIRECTION: East
COMMENTS: Photo taken of sample X219 collected from the south vessel slip.

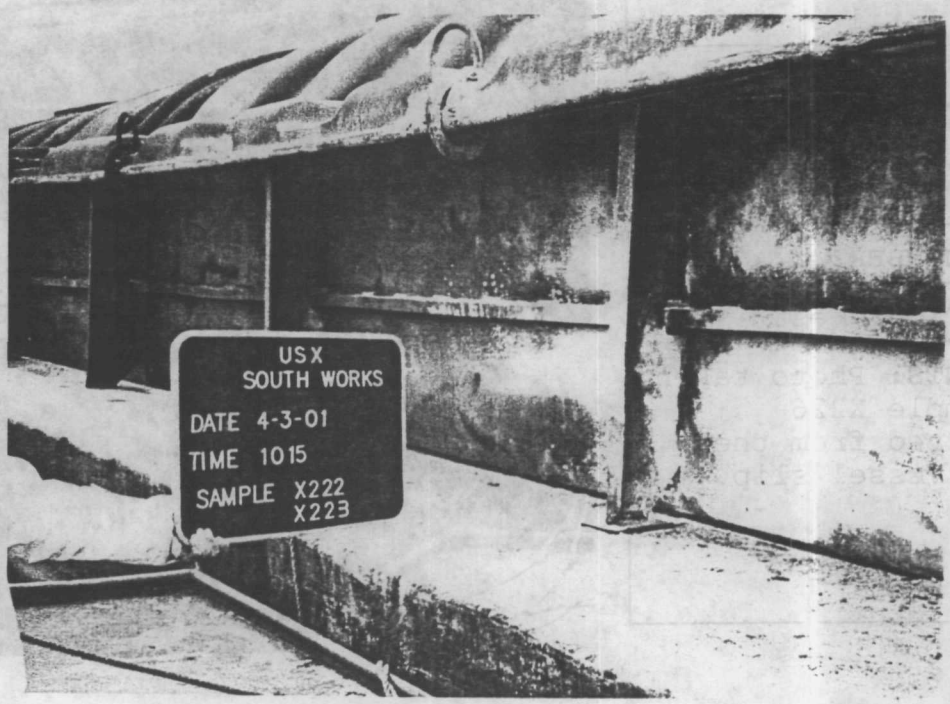


DATE: April 3, 2001
TIME: 09:10 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 16
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X220 collected from the south vessel slip.

SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

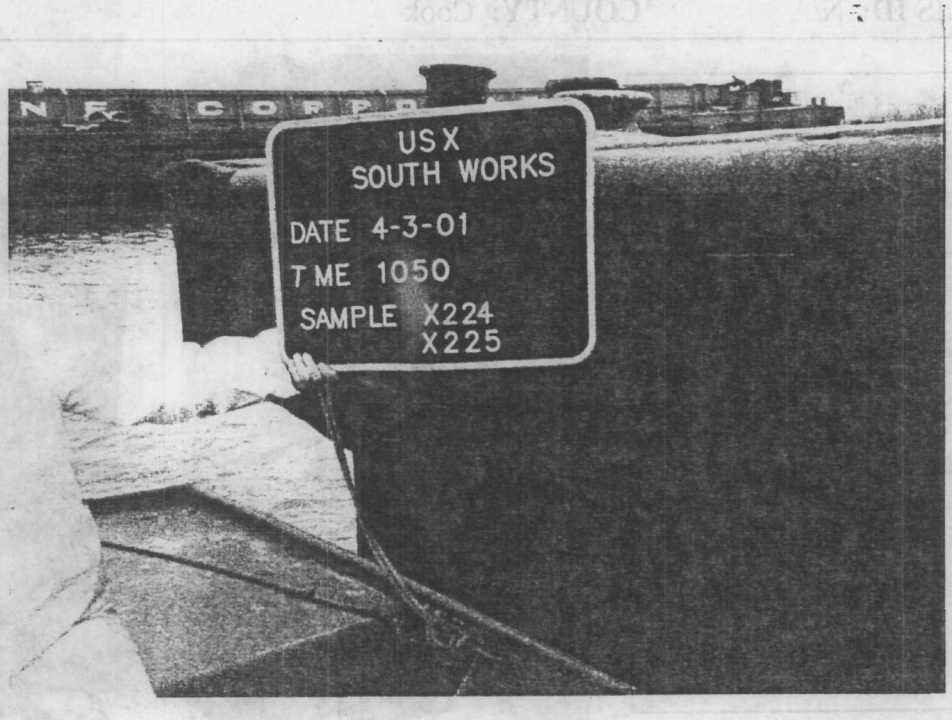
DATE: April 3, 2001
TIME: 09:25 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 17
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X221 collected from the south vessel slip.

DATE: April 3, 2001
TIME: 10:15 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 18
ROLL NUMBER: N/A
DIRECTION: East
COMMENTS: Photo taken of sample X222 and X223 collected from the south vessel slip.

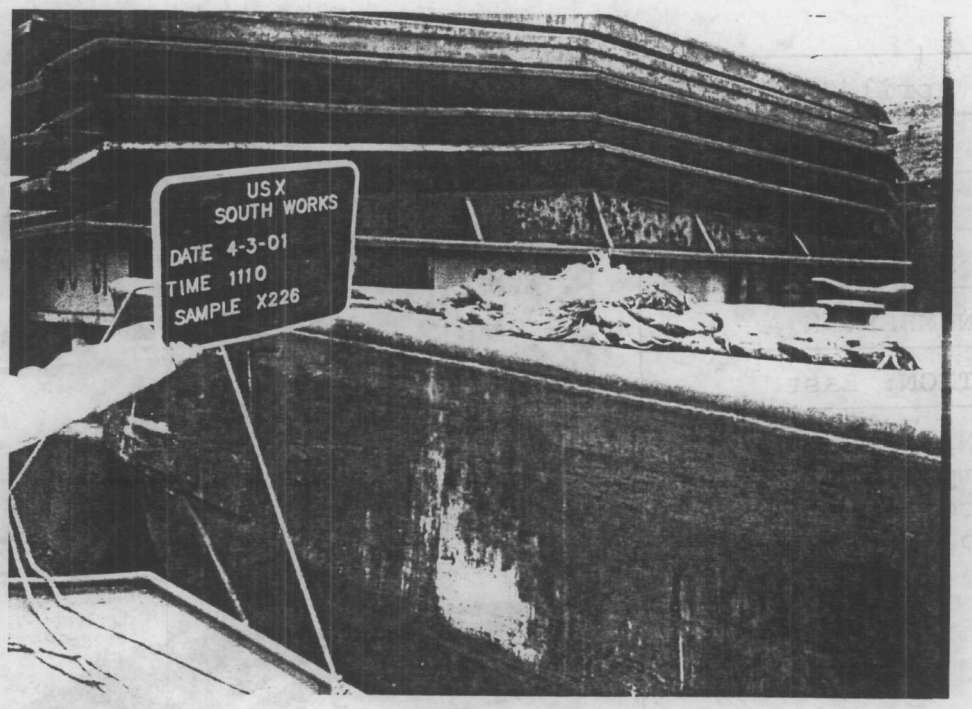


SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

DATE: April 3, 2001
TIME: 10:50 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 19
ROLL NUMBER: N/A
DIRECTION: East
COMMENTS: Photo taken of sample X224 and X225 collected from the south vessel slip.

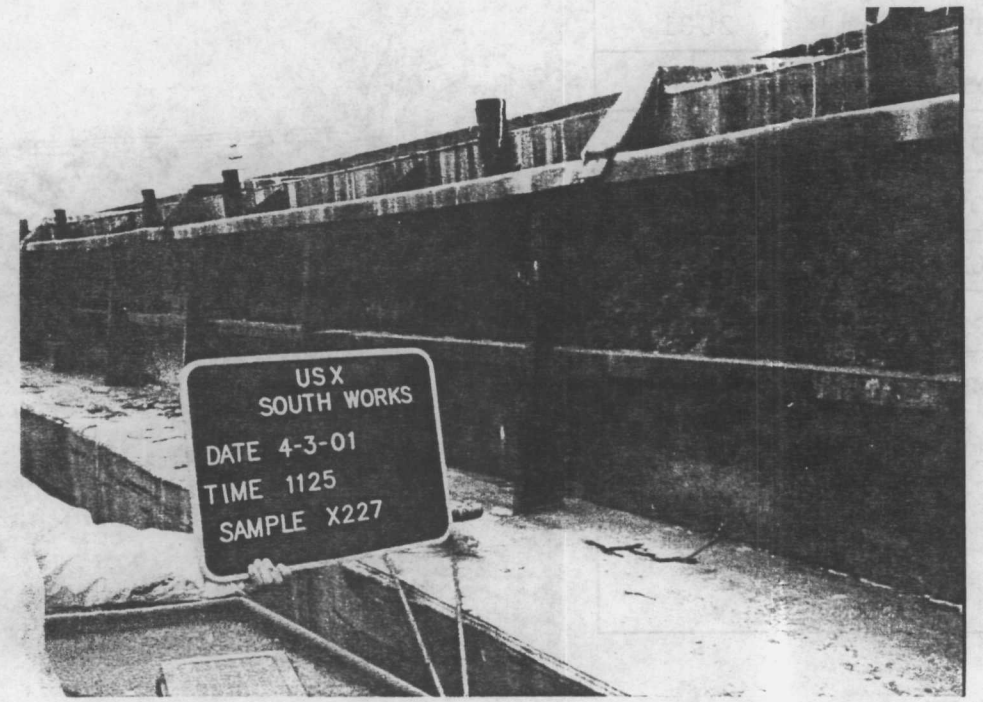


DATE: April 3, 2001
TIME: 11:10 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 20
ROLL NUMBER: N/A
DIRECTION: West
COMMENTS: Photo taken of sample X226 collected from the south vessel slip.

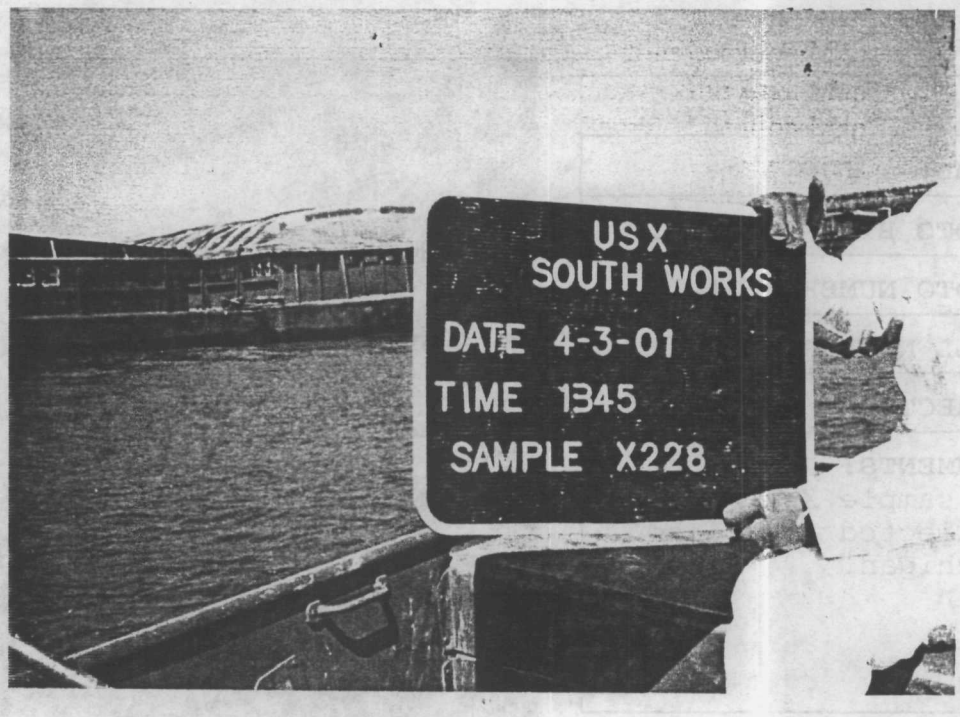


SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

DATE: April 3, 2001
TIME: 11:25 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 21
ROLL NUMBER: N/A
DIRECTION: East
COMMENTS: Photo taken of sample X227 collected from the south vessel slip.



DATE: April 3, 2001
TIME: 13:45 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 22
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X228 collected from the south vessel slip.



SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

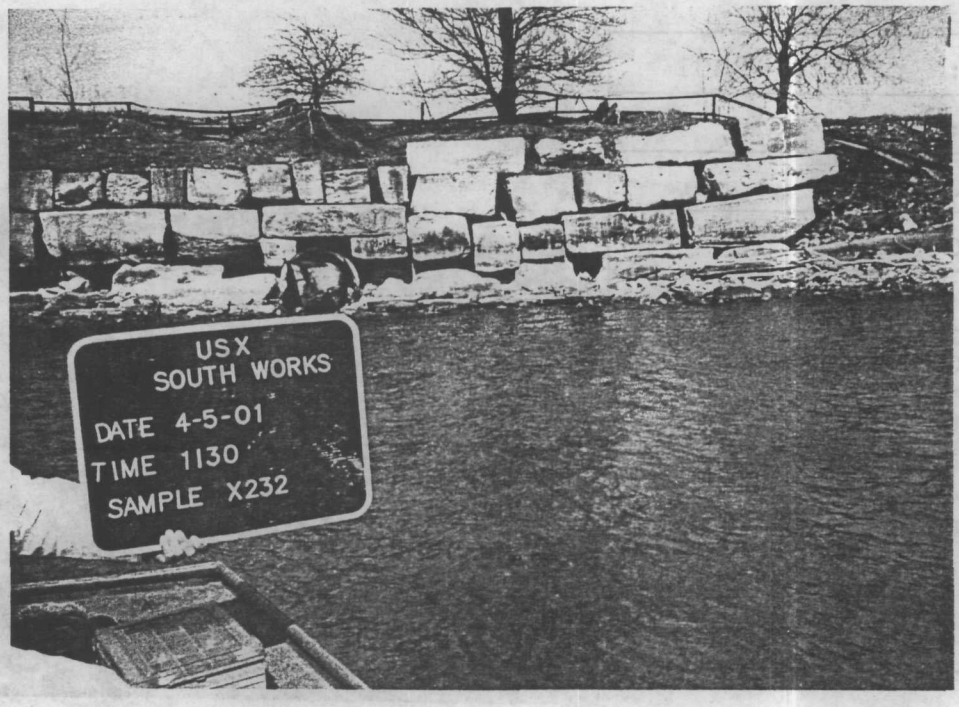
DATE: April 4, 2001
TIME: 10:20 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 23
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X229 collected from Lake Michigan.

DATE: April 4, 2001
TIME: 10:30 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 24
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X230 collected from Lake Michigan.

SITE NAME: United States Steel South Works	
CERCLIS ID: N/A	**COUNTY:** Cook

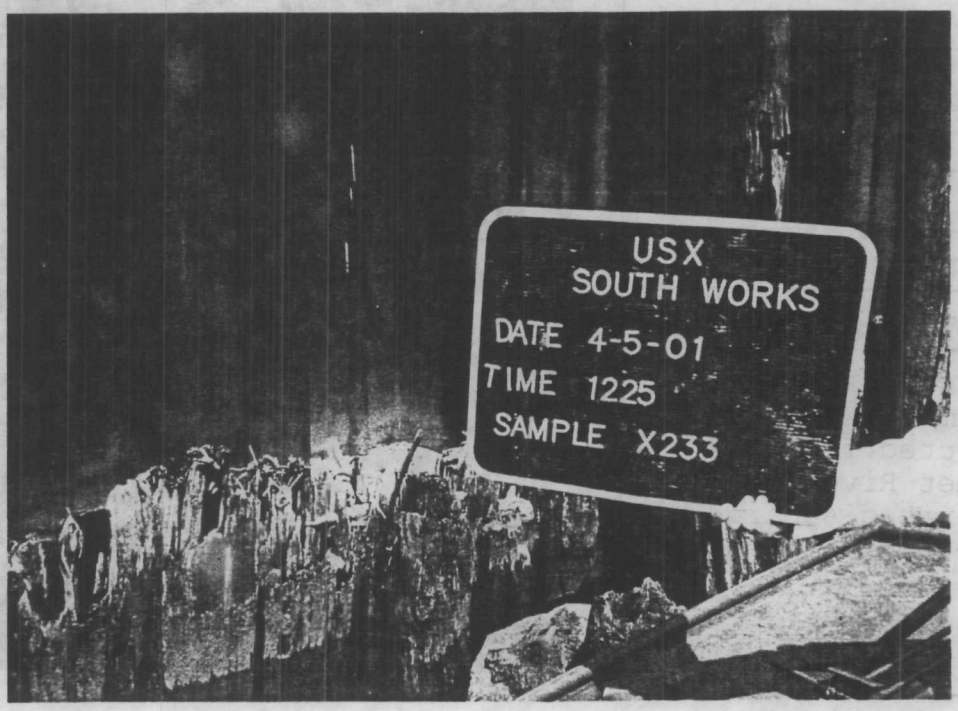
DATE: April 4, 2001
TIME: 10:50 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 25
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X231 collected from the Calumet River near a historic discharge point.

DATE: April 4, 2001
TIME: 11:30 a.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 26
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X232 collected from the Calumet River near a historic discharge point.



SITE NAME:	United States Steel South Works
CERCLIS ID: N/A	**COUNTY:** Cook

DATE: April 4, 2001
TIME: 12:25 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 27
ROLL NUMBER: N/A
DIRECTION: North
COMMENTS: Photo taken of sample X233 collected from the Calumet River near the south vessel slip.



DATE: April 4, 2001
TIME: 12:35 p.m.
PHOTO BY: M. Wagner
PHOTO NUMBER: 28
ROLL NUMBER: N/A
DIRECTION: West
COMMENTS: Photo taken of sample X234 collected from the Calumet River.